

RECLOSABLE CONTAINER LID

CROSS-REFERENCE TO RELATED APPLICATIONS:

This is a divisional application of co-pending U.S. Patent Application No. 09/923,763, filed August 6, 2001.

5 FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT:

Not Applicable.

TECHNICAL FIELD:

10 The present invention relates to a lid for a flowable substance container. More specifically, the present invention relates to a reclosable lid for use with a drink container.

BACKGROUND OF THE INVENTION:

15 Lids for containers are well-known in the beverage container industry. In general terms, lids for single-use or disposable containers have three main components: a top wall or surface, a mounting portion, and an opening. Typically, the mounting portion is adapted to engage an upper rim of the container to seal the lid on the container. The opening is adapted to permit the flow of the container contents through the lid.

20 Existing lid designs suffer from a number of problems including untimely spillage through the opening due to the lack of a reliable means for sealing the opening. The inability to effectively seal the opening can also result in a significant loss of heat from the container contents through the opening. To address these and other problems, a number of lid designs include a movable cover portion for the opening. However, most existing movable covers lack structural integrity and as a result, do not effectively seal
25 the opening. Also, a number of movable covers are difficult to operate due to their complex design. In addition, a vast majority of movable covers interfere with a user

consuming the container contents through the opening.

U.S. Patent No. 4,579,245 to Narushko provides an example of a container lid with a movable closing flap. The lid has a raised segment that forms a channel, which is adapted to receive the closing flap. The closing flap is a curved piece that must be inserted into the channel. The closing flap is movable between an open position and a closed position. Because the movement of the closing flap is controlled by a series of notches, grooves, tabs and handles located on the channel and the closing flap, the closing flap is difficult to operate and the effectiveness of the lid is compromised.

Another example of a lid having a movable cover for the opening is disclosed in U.S. Patent No. 4,790,444 to Terzi. There, the hood or lid has an opening formed from a depending spout that is inserted into the container opening. The cover has exterior dimensions equivalent to the lid and is placed over the lid. The cover has an opening that must be aligned with the spout and the lid opening to form the drink passageway. The cover has a plurality of sockets, which when properly aligned, seal the lid opening. The cover is supported on the lid by a series of intricate structures and an annular gasket. Due to its complex array of structures, the lid and cover are difficult to assemble and operate. Furthermore, the array of structures can inhibit the alignment of the lid opening and the cover opening negatively affecting the formation of the drink passageway.

Therefore, there is a definite need for a reclosable container lid that reliably seals the opening. In addition, there is a need for such a lid that is easy to operate and does not interfere with a user consuming the container contents through the opening.

The present invention is provided to solve these and other problems.

SUMMARY OF THE INVENTION:

The present invention relates to a reclosable lid for use with a flowable substance container. The lid has a first piece or cover, and a reclosable second piece or disk. The cover has a top wall and a side wall depending from the top wall. The side wall has a mounting portion for connecting the lid on the container. The cover includes an opening in the top wall, the opening adapted to permit the flow of the substance through the lid. The cover further includes a slot located in the top wall and a recessed portion located in both the top wall and the side wall.

The disk has at least one aperture, a post, and a projection. The aperture and the projection are each cooperatively dimensioned with the opening. The aperture is adapted

to form a passageway when aligned with the opening. The post is adapted to be received by the slot in the cover. The disk is movable between a first and second position, wherein at least a portion of the projection is received in the opening in the first position and the wherein the aperture is aligned with the opening in the second position. The disk has at least one well adapted to facilitate stacking the lids in a vertical configuration.

The cover includes at least one support member having a cavity extending radially inward from the side wall. The cavity of the support member forms a support ledge on an inner surface of the cover that is adapted to provide rotatable support to the disk. The disk is further supported by an internal edge that is formed on the inner surface by the recessed portion, which extends radially inward from the side wall.

The disk is movable between the first and second positions by a user engaging and actuating the post. While the disk is moved between the first and second positions, the disk is rotatably supported by the support ledge and the support edge.

In another preferred embodiment of the invention, the lid includes a cover and an overlay. The cover has a top wall and a side wall depending from the top wall. The side wall has a mounting portion for connecting the lid on the container. The lid includes an opening in the top wall, the opening adapted to permit the flow of the substance through the lid. The lid further includes a recessed portion located in both the top wall and the side wall.

The overlay has a top wall and a side wall depending from the top wall. The side wall has a mounting portion adapted to connect the overlay to the cover. Also, the overlay has a projection in the top wall and at least one aperture. In addition, the overlay has at least one gripping element adapted to facilitate rotational movement of the overlay.

The overlay and the disk are cooperatively dimensioned such that they are in rotational engagement when the overlay is positioned on the disk. The overlay is movable between a first position and a second position, wherein a portion of the projection is received in the opening in the first position and wherein the aperture is aligned with the opening in the overlay in the second position.

The overlay is movable between the first and second positions by a user engaging either the overlay or the gripping element. While the overlay is moved between the first and second positions, the overlay is rotatably supported by the engagement of the mounting portion of the cover and the mounting portion of the overlay.

Other features and advantages of the invention will be apparent from the following specification taken in conjunction with the following drawings.

BRIEF DESCRIPTION OF THE DRAWINGS:

- 5 FIG. 1 is a perspective view of a reclosable lid of the present invention, showing a cover;
- FIG. 2 is an end view of the cover of FIG.1;
- FIG. 3 is a perspective view of an interior cavity of the cover of FIG.1;
- FIG. 4 is a perspective view of a movable disk of the lid of FIG.1;
- 10 FIG. 5 is a perspective view of an alternate embodiment of a lid of the present invention, showing the lid in an open position;
- FIG. 6 is a perspective view of a cover of the lid of FIG.5;
- FIG. 7 is a perspective view of an overlay of the lid of FIG. 5; and,
- FIG. 8 is a perspective view of the lid of FIG. 5, showing the lid in a closed
- 15 position.

DETAILED DESCRIPTION OF THE INVENTION:

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail preferred embodiments

20 of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the broad aspect of the invention to the embodiments illustrated.

A reclosable lid **10** for a container (not shown) of the present invention is illustrated in FIG. 1. The container has a central opening defining a volume that can be

25 used to hold or contain a flowable substance, for example a liquid or a powder. The container and the lid **10** can be of either the disposable or extended use variety. FIG. 1 shows the lid **10** in the closed position wherein the lid **10** is sealed such that the flowable substance cannot flow through the lid **10**. The lid **10** generally has a first piece or cover **12**, and a movable second piece or disk **50** (positioned underneath cover **12** in FIG. 1).

30 The cover **12** of the lid **10** is adapted to span the opening in the upper portion of the container that is generally defined by an upper rim or edge of the container. For illustrative purposes, the container could be a coffee cup having an opening defined by the rim of the cup.

The cover **12** has an annular top wall **14** and a side wall **16** depending from a peripheral edge **18** of the top wall **14**. Although the top wall **14** is shown as having a generally flat upper surface **14a**, the upper surface **14a** can be curved or angled. The side wall **16** has a side wall surface **16a** and a lower edge **20**. The side wall surface **16a** can be curved or generally flat. The overall shape of the cover **12** is generally frustaconical, however, the cover **12** can have a number of other configurations.

A mounting portion **22** depends from the lower edge **20** of the side wall **16**. The mounting portion **22** includes a generally annular flange **24** and a generally annular skirt **26**. The mounting portion **22** is adapted for connecting the lid **10** to the container in a manner that seals the lid **10** on the container. Thus, the mounting portion **22** prevents leakage of the container contents between the lid **10** and the container when the lid **10** is positioned on the container. In a preferred embodiment, the mounting portion **22** is integral with the side wall **16**.

An aperture or drink opening **28** is located preferably in the top wall **14**. Alternatively, the drink opening is located in the side wall **16**. The opening **28** is adapted to permit the passage or flow of the flowable contents held by the container through the cover **12**. The opening **28** has an edge **29** that defines the shape of the opening **28**. Although shown in FIG. 1 as having an obround shape, the opening **28** can have a variety of shapes, including but not limited to circular, square, or rectangular. In the closed lid position shown in FIG. 1, at least a portion of a projection **52** of the disk **50** is received by or positioned in the opening **28**. Alternatively, the disk **50** has a generally planar surface that is aligned with a surface of the cover **12** proximate the opening **28** in a surface-to-surface engagement such that the opening **28** is sealed. These aspects will be described below in greater detail.

A slot or channel **30** is located preferably in the top wall **14**. The slot **30** has an edge **32** that defines the shape of the slot **30**. Although shown in FIG. 1 as having an obround shape, the slot **30** can have a variety of shapes, including but not limited to circular, square, or rectangular. A post **54** extends from the movable disk **50**. The slot **30** is adapted to receive at least a portion of the post **54** extending through at least a portion of the slot **30**. Described in a different manner, at least a portion of the post **54** extends past the top wall surface **14a**. This aspect will also be described below in greater detail.

Referring to FIGS. 1 and 2, the cover **12** further comprises at least one support

member **34**. The support member **34** has a peripheral edge **44** that defines the shape of the support member **34**. The peripheral edge **44** has an upper edge **44a** and a lower edge **44b**. The peripheral edge **44** can have a variety of shapes, including the linear shape of the upper edge **44a** and the serrated shape of the lower edge **44b**. A cavity **46** is recessed from the peripheral edge **44**. Described in a different manner, the cavity **46** extends radially inward from the peripheral edge **44**. As a result, at least a portion of the support member **34** extends radially inward past an inner surface of the side wall **16**. The dimensions and configurations of the support member **34** and the cavity **46** can vary with design parameters, including but not limited to the overall size of the cover **12** and/or the size of the movable second piece **50**. The position of the support member **34** can also vary along the height of the side wall **16**. For example, the support member **34** can be positioned proximate the peripheral edge **18**, or the support member **34** can be positioned closer to the mounting portion **22**.

FIG. 3 shows an interior cavity of the lid **12**. At least one internal support ledge **102** is positioned on an internal surface **100** of the cover **12**. The support ledge **102** is formed from the material defining the cavity **46** of the support member **34** which extends radially inward from the side wall **16**. Accordingly, the material that forms the cavity **46** also forms the internal support ledge **102**. The support ledge **102** has an upper edge **102a**. Although shown having an elongated configuration, the dimensions and configurations of the support ledge **102** can vary depending upon the configuration of the support member **34** and the degree to which the support member **34** extends radially inward. The role of the support ledge **102** is fully described below.

As shown in FIG.1, a center portion **36** is positioned radially inward from an inner edge **38** of the top wall **14**. Preferably, the center portion **36** is recessed such that the center portion **36** has a curvilinear configuration when viewed in cross-section. The degree of recess or curvature of the center portion **36** can vary with the design parameters of the lid **10**. Alternatively, the center portion **36** is in planar alignment with the top wall **14**. In this configuration, the center portion **36** is not recessed.

Referring to FIGS. 1 and 2, the side wall **16** has a recessed portion **40**, that is adapted to receive a lip of a person drinking from the container. An edge **42** of recessed portion **40** defines the configuration of the portion **40**. In a preferred embodiment, the edge **42** has a generally straight base portion **43** that connects with a generally outwardly curved end segment **45** at each end. The recessed portion **40** is positioned radially

inward from the side wall surface **16a**. Although the recessed portion **40** is shown positioned on both the top wall **14** and the side wall **16**, the recessed portion **40** can be limited to either the top wall **14** or the side wall **16**. The shape and configuration of the recessed portion **40** can be varied to conform to numerous design parameters. Similarly, the degree of recess of the portion **40** can vary. For example, as shown in FIG. 1, the recessed portion **40** is deeper at base portion **43** and shallower at an end proximate the drink opening **28**. Preferably, the recessed portion **40** is positioned about the drink opening **28**. The top wall **14** and the side wall **16** cooperate to form a rounded edge **40b** at the recessed portion **40**.

Referring to FIG. 3, an internal support edge **104** is positioned in the internal surface **100** of the cover **12**. The internal support edge **104** is formed from the material defining the recessed portion **40** which extends radially inward from the side wall **16**. Accordingly, a portion of the material that forms the recessed portion **40** also forms the internal support edge **104**. Preferably, the support edge **104** is positioned internal to and coincident with the rounded edge **40b** of the recessed portion **40**. The dimensions and configurations of the support edge **104** can vary depending upon the configuration of the recessed portion **40** and the degree to which the recessed portion **40** extends radially inward. The role of the support edge **104** is fully described below.

FIG. 4 shows the second piece or disk **50**. The disk **50** has an outer edge **51** and a top wall **56** with a top wall surface **56a**. The top wall **56** has an outer shoulder **58** and an inner shoulder **60**. A side wall **59** depends from the outer shoulder **58**. A center portion **62** extends radially inward from the inner shoulder **60**. The center portion **62** comprises an annular side wall **64** and an inner portion **66**. Preferably, the center portion **62** is recessed such that the center portion **62** has a curvilinear configuration when viewed in cross-section. The degree of recess or curvature of the center portion **62** can vary with the design parameters of the lid **10**. Preferably, the degree of recess of the center portion **62** of the disk **50** is similar to the degree of recess of the center portion **36** of the cover **12**. Alternatively, the inner portion **66** can be removed from the center portion **62** to reduce the weight and/or cost of the disk **50**. In this configuration, the disk **50** has a ring-shaped configuration.

The projection **52** extends from a portion of the top wall **56**. The projection **52** has a peripheral edge **68** that defines the shape of the projection **52**. Preferably, the projection **52** is cooperatively dimensioned with the drink opening **28** such that at least

a portion of the projection **52** is adapted to be received by or positioned in the opening **28**. The projection **52** has a projection surface **52a** that is preferably sloped or angled to facilitate reception of the projection **52** by the opening **28**. When the projection **52** is completely received in the opening **28**, the opening **28** is sealed and the lid **10** is in the closed position shown in FIG. 1. In the closed position, a top portion **70** of the projection **52** extends past the recessed portion surface **40a**.

The post **54** extends from a portion of the top wall **56**. As shown in FIG. 3, the post **54** has opposed end walls **72**, opposed side walls **74**, and a top wall **76**. The post **54** can have either a solid or hollow construction depending upon design parameters. At least a portion of the post **54** is received by the slot **30** and extends past the top wall surface **14a**. Although the configuration and dimensions of the post **54** can vary according to design parameters of the lid **10**, the post **54** must retain a configuration that permits it to be received by the slot **30**. As shown in FIG. 4, the post **54** has a catenoid shape. The post **54** can have a gripping portion (not shown) that is adapted to facilitate the engagement of a user's fingers with the post **54**. The gripping portion can be integral to the post **54** or it can be a separate element fastened to a portion of the post **54**. For example, the gripping portion can be a plastic or rubber element fastened to the walls **72**, **74**.

As shown in FIG. 4, the disk **50** has at least one aperture **78**. The aperture **78** has a peripheral edge **80** that defines the shape of the aperture **78**. When the aperture **78** is aligned with the drink opening **28**, a passageway is formed between the disk **50** and the cover **12** permitting the passage or flow of the flowable substance held by the container through the lid **10**. Although the aperture **78** can have a variety of configurations and dimensions, the aperture **78** is preferably cooperatively dimensioned with the drink opening **28**. In a preferred embodiment, the aperture **78** is positioned within the disk **50** recessed portion **84** and spaced a distance from the projection **52**. In another preferred embodiment, the disk **50** includes two separate apertures **78**.

The disk recessed portion **84** is preferably positioned about the projection **52** and the aperture **78**. The degree of recess of the portion **84** can vary. An edge **86** of recessed portion **84** defines the configuration of the recessed portion **84**. Although the recessed portion **84** is shown positioned on a portion of both the disk side wall **59** and the disk top wall **56**, the recessed portion **84** can be limited to either the side wall **59** or the top wall **56**. The recessed portion **84** is adapted to be received by an inner surface of the recessed

portion **40** of the cover **12** when the disk **50** is positioned proximate the cover **12**. Accordingly, the shape and configuration of the recessed portion **84** of the disk **50** is similar to the shape and configuration recessed portion **40** of the cover **12**. The top wall **56** and the side wall **59** cooperate to form a rounded edge **84b** at the recessed portion **84**.

5 As further shown in FIG. 4, the disk **50** has at least one well **90** depending from a portion of the disk **50**. The disk **50** has a first well **90a** and a second well **90b** in one preferred embodiment. The well **90** can depend from either the top wall **56** or the side wall **59**, or therebetween. The well **90** has an outer edge **92** that defines the general shape of the well **90**. A shoulder **94** depends from the outer edge **92**. The shoulder **94**
10 can have a curvilinear portion **94a** and a generally linear portion **94b**. An inner wall **96** depends from the shoulder **94**. As shown in FIG. 4, the inner wall **96** has a generally annular configuration resulting in a generally tubular well configuration. However, the well **90** can have a variety of configurations depending upon design parameters. Preferably, the well **90** has a bottom wall (not shown). Alternatively, the bottom wall
15 is omitted, causing the well **90** to have a hollow, tubular configuration.

 The first and second wells **90a**, **90b** can be positioned at various locations in the disk **50**. Preferably, the first and second wells **90a**, **90b** are spaced a distance apart. The first well **90a** and the second well **90b** have the same dimensions and configurations. The depth or length of the well **90**, as measured from a lower surface (not shown) of the
20 disk **50** can vary. Similarly, the number and dimensions of the well **90**, including the diameter, can vary with the numerous design parameters.

 A drain hole **49** can be positioned in the disk **50**, preferably in the center portion **62**. When the flowable contents, i.e., liquid, accumulate between an interior surface of the cover **12** and the disk **50**, the drain hole ensures the drainage of such contents into the
25 container.

 Referring to FIG. 1, the disk **50** and the cover **12** are cooperatively dimensioned such that the disk **50** can be positioned within an interior portion of the cover **12** to define an “assembled position.” Referring to FIG. 3, in the assembled position, the disk **50** is rotatably supported by at least one support ledge **102** which is formed by the support
30 member **34** extending radially inward as explained above. Specifically, a portion of the edge **51** of the disk **50** rotatably engages the support ledge **102**. The disk **50** can be further rotatably supported by the interior edge **104** of the recessed portion **40**. Although the cover **12** is shown in one preferred embodiment as having three support members **34**

and three corresponding support ledges **102**, the number and configuration of the members **34** and the ledges **102** can vary with the design parameters.

In the assembled position, the disk **50** is positioned proximate the cover **12** such that at least a portion of the post **54** is received by and extends through the slot **30**.
5 Described in a different manner, the disk **50** is positioned beneath the cover **12** such that the center portion **36** of the cover **12** is proximate the center portion **62** of the disk **50**.

In the assembled position, the disk **50** is movable between a first position **P1** and a second position **P2**. In the first position **P1**, as shown in FIG. 1, the projection **52** is received by the drink opening **28** such that the opening **28** is sealed and the lid **10** is closed. When the opening **28** is sealed, the edge **29** of the opening **28** is in frictional engagement with the projection **52**. The top portion **70** of the projection **52** can extend past the edge **29** of the drink opening **28**. This seal prevents the flow of the flowable substance in the container through the opening **28**, enabling the container and lid **10** to be moved without risking spillage. Also, in the first position **P1**, the recessed portion **84** of the disk **50** is engaged with the recessed portion **40** of the cover **12**. In addition, in the first position **P1**, the aperture **78** is misaligned or offset from the opening **28**.
15 Alternatively, the projection **52** and the opening **28** are in a snap fit engagement wherein each have sufficient structure to enable the snap fit engagement. Other cooperating structures can also be utilized.

20 In an alternate configuration of the disk **50**, the projection **52** is omitted and the disk **50** has a generally planar surface (not shown). In the first position **P1**, the planar surface of the disk **50** is aligned with the opening **28** in a surface-to-surface engagement such that the opening **28** is sealed.

In the second position **P2**, a user engages the post **54** to rotate the disk **50** wherein the aperture **78** is aligned with the drink opening **28** to form a passageway between the disk **50** and the cover **12** wherein the lid **10** is open. The passageway permits the passage or flow of the flowable substance held by the container through the lid **10**. When the lid **10** is in the second position **P2**, at least a portion of the edge **80** of the aperture **78** is aligned with at least a portion of the edge **29** of the drink opening **28**. Also, in the second position **P2**, the recessed portion **84** of the disk **50** is misaligned or offset from with the recessed portion **40** of the cover **12**. In addition, in the second position **P2**, the projection **52** is misaligned or offset from the opening **28**. When the aperture **78** is partially aligned with the drink opening **28**, the passageway remains but its dimensions are reduced.
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When the aperture **78** is completely misaligned with the drink opening **28**, the passageway is eliminated. When the aperture **78** is completely misaligned with the drink opening **28** and the projection **52** is completely received in the opening **28**, the opening **28** is sealed and the lid **10** is in the first position **P1**.

5 When the disk **50** is moved between the first position **P1** and the second position **P2**, a portion of the edge **51** of the disk **50** remains in rotatable engagement with the support ledge **102**. Accordingly, the support ledge **102** provides support to the disk **50** such that the disk **50** remains in the assembled position during movement between the first and second positions, **P1**, **P2**. When the cover **12** includes a plurality of support
10 ledges **102**, a greater portion of the edge **51** of the disk **50** remains in rotatable engagement with the support ledges **102**. The edge **104** of the recessed portion **40** provides additional support for the disk **50** as it is moved between the first and second positions **P1**, **P2**.

 A user can move the disk **50** between the first position **P1** and the second position
15 **P2** by grasping and actuating or manipulating the post **54** between the first end **30a** of the slot **30** and the second end **30b** of the slot **30**. Referring to FIG. 1, when the post **54** is proximate the first end **30a**, the disk **50** is in the first position **P1**. Conversely, when the post **54** is proximate the second end **30b**, the disk **50** is in the second position **P2**. The post **54** can be located in a number of positions between the first and second ends
20 **30a**, **30b** and as a result, the projection **52** can be misaligned with the opening **28** to varying degrees.

 The disk **50** can be rotated or moved a varying amount depending upon the numerous design parameters of the lid **10**, including but not limited to the configuration and dimensions of the post **54** and the slot **30**. Thus, the disk **50** assumes a number of
25 positions and those positions depend upon the location of the post **54** relative to the slot **30**. The movement of the disk **50** and the post **54** is ultimately constrained by the first and second ends **30a**, **30b** of the slot **30**.

 The lid **10** is adapted to permit a user to move the post **54** between the first and second positions **P1**, **P2** with only one hand. This means that a user can hold the
30 container and manipulate the post **54** with the same hand. This increases the flexibility and the commercial value of the lid **10**.

 As explained above, the disk **50** can have two separate apertures **78**, wherein the apertures **78** are positioned about the projection **52**. In this configuration, the disk **50** can

be rotated in either a clockwise or counter-clockwise direction to move the disk **50** between the first position **P1** and the second position **P2**. For example, rotating the disk **50** in the clockwise direction brings one aperture **78** into alignment with the opening **28**, while rotating the disk in the counter-clockwise direction brings the other aperture **78** into alignment with the opening **28**. This feature further increases the flexibility and the commercial value of the lid **10**. In such configuration, the length of the slot **30** is increased to allow for counterclockwise rotation of the disk **50** such that both apertures **78** can be aligned with the opening **28**.

The lid **10** is adapted to be used without the disk **50**. This means that the cover **12** is connected to a container but the disk **50** is omitted. In this configuration, there is no slot **30** and there is no structure to seal the opening **28** in the cover **12** and as a result, the flowable substance held by the container can pass through the lid **10**. In this configuration, the recessed portion **40** remains positioned on both the top wall **14** and the side wall **16**. However, the drink opening **28** can be positioned in either the top wall **14** or the side wall **16**.

The opening **28** can be formed with a range of dimensions. At a minimum, the opening **28** should have dimensions sufficient to permit the passage of the flowable substance held by the container and receive the projection **52**. The slot **30** can be formed with a range of dimensions. At a minimum, the slot **30** should have dimensions sufficient to receive and permit the movement of the post **54**.

The opening **28** can be located at various positions along the top wall **14** depending upon design parameters. Similarly, the slot **30** can be located at various positions along the top wall **12**. The opening **28** and the slot **30** are spaced a distance apart. Preferably, the opening **28** and the slot **30** are opposed on the top wall **12**, meaning that they are positioned approximately 180 degrees apart. Alternatively, the post **54** is located on the sidewall **59** of the disk **50**, and the slot **30** is cooperatively located on the sidewall **16** of the cover **12**. In this configuration, a user moves the lid **10** between the first and second positions **P1**, **P2** by engaging the post **54** that extends through the slot **30** positioned on the side wall **16** of the cover **12**.

Although shown as having a generally circular shape, the lid **10**, including the mounting portion **22**, the flange **24** and the skirt **26**, can have numerous configurations. For example, the lid **10** could have a rectangular, square, or oval shape. To ensure a leak-proof seal with the container, the shape of the mounting portion **22** should match

the shape of the upper edge of the container so a cooperative sealing engagement can be achieved.

Alternatively, the mounting portion **22** could have a shape similar to the upper edge of the container, yet dissimilar from the shape of the side wall **16** and the top wall **14**. For example, the mounting portion **22** could have an annular shape consistent with the container shape and the walls **14**, **16** could have a non-annular shape.

Unlike prior art designs, the dimensions and the configuration of the opening **28** are not affected by the engagement and disengagement of the projection **52** as the disk **50** is moved between the first and second positions **P1**, **P2**. This attribute allows a user to repeatedly move the disk **50** between the first position and second position. Accordingly, the structural integrity and the durability of the lid **10** are increased.

The well **90** is adapted to aid in the storage and/or stacking of the disk **50** prior to the disk **50** and cover **12** being placed in the assembled position. Specifically, the well **90** is adapted to ensure that multiple disks **50** remain stacked in a stable vertical configuration prior to assembly of the lid **10**. A portion of the well **90** of a first disk **50** engages a portion of well **90** of an adjacent second disk **50** positioned below the first disk **50**. Accordingly, the well **90** should have a depth or length sufficient to permit it to engage a portion of the well **90** of the second disk **50**. In an alternative configuration, the well **90** can be randomly placed wherein the well **90** of the first disk would rest on the top wall **56** of the second disk **50**.

The well **90** is further adapted to aid in the storage and/or stacking of the assembled lid **10**. Specifically, the well **90** is adapted to ensure that multiple lids **10** remain stacked in a stable vertical configuration. A portion of the well **90** of a first lid **10** engages a portion of an adjacent cover **12** of a second lid **10** positioned below the first lid **10**. Accordingly, the well **90** should have a depth or length sufficient to permit it to engage a portion of the cover **12**. The engagement of the well **90** with a portion of the cover **12** stabilizes the first and second lids **10** in their vertical position. The engagement of the well **90** with a portion of the cover **12** prevents the first and second lids **10** from becoming destabilized and/or misaligned.

The lid **10** can be formed by a variety of manufacturing processes, such as injection molding or a thermoforming operation, preferably vacuum forming and/or pressure forming. The cover **12** is preferably formed from plastic, however, other lightweight materials can be used to form the cover **12**. After the manufacturing process

has been completed, the drink opening **28** and the slot **30** may be formed in the cover **12** with a punch and die.

Preferably, the disk **50** is formed from the same material used to form the cover **12**. However, the disk **50** can be formed from other lightweight materials. After the manufacturing process has been completed, the aperture **78** may be formed in the disk **50** with a punch and die.

The lid **10** can include a color-based system for indicating the status of the lid **10**. Under the color-based system, a portion of the lid **10** would display a first color, e.g., red, when the lid **10** is closed in the first position **P1**. Similarly, a portion of the lid **10** would display a second color, e.g., green, when the lid **10** is open in the second position **P2**. The first and second colors would be displayed in a visible portion of the lid **10** such that a user of the lid **10** could readily ascertain the status of the lid **10**. Referring to FIGS. 1 and 4, the first color is positioned on the disk **50** to the right of the post **54** and the second color is positioned on the disk **50** to the left of the post **54**. Accordingly, when the lid **10** is in the closed position **P1** shown in FIG. 1, the first color is visible through the slot **30**. Conversely, when the lid **10** is in the open position **P2**, the second color is visible through the slot **30**. In this manner, a user can verify the status of the lid **10** by simply looking at the color indicator displayed through the slot **30**. As a result, the utility and marketability of the lid **10** is increased.

In an alternate color-based system configuration, the first color is positioned on the projection **52** wherein it is visible when the lid **10** is in the closed position **P1**. The second color is positioned on the edge **80** about the aperture **78** wherein it is visible when the lid **10** is in the open position **P2**. In this manner, a user can verify the status of the lid **10** by simply looking at the color indicator displayed in the opening **28**.

FIGS. 5-8 disclose another preferred embodiment of the lid of the present invention. As shown in FIG. 5, the reclosable lid **210** generally includes a first piece or cover **212**, and a movable second piece or overlay **250**. FIG. 5 shows the lid **210** in the open position wherein the flowable substance can flow or pass through the lid **210** via opening **228**.

Referring to FIGS. 5 and 6, the cover **212** is adapted to span the opening in the upper portion of the container (not shown) that is generally defined by an upper rim or edge of the container. The cover **212** has an annular top wall **214** and a side wall **216** depending from an outer or peripheral edge **218** of the top wall **214**. Although the top

wall **214** is shown as having a generally flat upper surface **214a**, the upper surface **214a** can be curved or angled. The side wall **216** has a side wall surface **216a** and a lower edge **220**. The side wall surface **216a** can be curved, angled, or generally flat. The overall shape of the cover **212** is generally frustaconical, however, the cover **212** can have a number of other configurations.

A mounting portion **222** depends from the lower edge **220** of the side wall **218**. The mounting portion **222** includes a generally annular flange **224** and a generally annular skirt **226**. The mounting portion **222** is adapted for connecting the lid **210** to the container in a manner that seals the lid **210** on the container. Thus, the mounting portion **222** prevents leakage of the container contents between the lid **210** and the container when the lid **210** is positioned on the container. In a preferred embodiment, the mounting portion **222** is integral with the side wall **16**.

An aperture or drink opening **228** is located preferably in the top wall **216**. Alternatively, the drink opening **228** is located in the side wall **216**. The opening **228** is adapted to permit the passage or flow of the flowable contents held by the container through the cover **212**. The opening **228** has an edge **229** that defines the shape of the opening **228**. Although shown in FIG. 6 as having an obround shape, the opening **228** can have a variety of shapes, including but not limited to circular, square, or rectangular.

The opening **228** can be formed with a range of dimensions. At a minimum, the opening **228** should have dimensions sufficient to permit the passage of the flowable substance held by the container. The opening **228** can be located at various positions along the top wall **214** depending upon design parameters.

As shown in FIG. 6, a center portion **236** is positioned radially inward from an inner edge **238** of the top wall **214**. Preferably, the center portion **236** is recessed such that the center portion **236** has a curvilinear configuration when viewed in cross-section. Described in a different manner, the center portion **236** has a concave shape when the portion **236** is viewed from a point above the lid **210**. The degree of recess or curvature of the center portion **236** can vary with the design parameters of the lid **210**.

Referring to FIGS. 5 and 6, the side wall **216** has a recessed portion **240** that is adapted to receive a lip of a person drinking from the container. An edge **242** of recessed portion **240** defines the configuration of the portion **240**. The recessed portion **240** and the recessed surface **240a** are positioned radially inward from the side wall surface **216a**. Although the recessed portion **240** is shown positioned on both the top wall **214** and the

side wall **216**, the recessed portion **240** can be limited to either the top wall **214** or the side wall **216**. The shape and configuration of the recessed portion **240** can be varied to conform to numerous design parameters. Similarly, the degree of recess of the portion **240** can vary. Preferably, the recessed portion **240** is positioned about the drink opening **228**. The top wall **214** and the side wall **216** cooperate to form a rounded edge **240b** at the recessed portion **240**.

As shown in FIGS. 5 and 7, the overlay **250** is a discontinuous structure adapted to be positioned about the cover **212**. The overlay has a top wall **252** and a side wall **254** depending from an outer or peripheral edge **256** of the top wall **252**. Although the top wall **252** is shown as having a generally flat upper surface **252a**, the upper surface **252a** can be curved or angled. The side wall **254** has a side wall surface **254a** and a lower edge **258**. The side wall surface **254a** can be curved, angled or generally flat.

A mounting portion **260** depends from the lower edge **258** of the side wall **254**. The mounting portion **260** includes a generally annular flange **262** and a generally annular skirt **264**. The mounting portion **260** is adapted for rotatably connecting the overlay **250** to the mounting portion **222** of the cover **212** such that the overlay **250** and the cover **212** are in rotatable engagement. The mounting portions **222**, **260** are cooperatively dimensioned such that the overlay **250** can be positioned about the cover **212** wherein the overlay **250** can be rotatably moved with respect to the cover **212**. The mounting portions **222**, **260** have a generally annular configuration. Alternately, the mounting portions **222**, **260** could have a configuration with angular or linear segments.

Preferably the mounting portions **222**, **260** have a continuous configuration, as shown in FIGS. 5-8. Alternatively, the mounting portions **222**, **260** have a discontinuous configuration, meaning that the portions **222**, **260** have material removed that results in a notched configuration.

As shown in FIG. 7, the overlay **250** has a projection **264** that is located preferably in the top wall **252**. Alternatively, when the drink opening **228** is positioned in the side wall **216** of the cover **212**, the projection **264** is cooperatively positioned in the side wall **254** of the overlay **250**. The projection **264** depends from a lower or inner surface (not shown) of the top wall **252**. The projection **264** has a peripheral edge **266** that defines the shape of the projection **264**. Preferably, the projection **264** is cooperatively dimensioned with the drink opening **228** such that at least a portion of the projection **264** is adapted to be received by or positioned in the opening **228**. When the

projection **264** is completely received in the opening **228**, the opening **228** is sealed and the lid **210** is in the closed position shown in FIG. 8. In the closed position, a bottom wall **268** of the projection **264** extends past the top wall surface **214a**.

As further shown in FIG. 7, a center portion **270** is positioned radially inward from an inner edge **272** of the top wall **252**. Preferably, the center portion **270** is recessed such that the center portion **270** has a curvilinear configuration when viewed in cross-section. Described in a different manner, the center portion **270** has a concave shape when the portion **270** is viewed from a point above the lid **210**. The degree of recess or curvature of the center portion **270** can vary with the design parameters of the lid **210**. Alternatively, the center portion **270** is in planar alignment with the top wall **252**. In this configuration, the center portion **270** is not recessed.

The overlay **250** has at least one gripping element **274** positioned on a portion of the side wall **254**. The gripping element **274** is adapted to facilitate rotational movement of the overlay **250**. Accordingly, a user engages the element **274** to aid in the rotation of the overlay **250**. Although shown as having a generally elongated configuration, the element **274** can have a wide range of configurations and dimensions. In addition, the gripping element **274** can be positioned on the side wall **254**, the top wall **252** or on a portion of both the side wall **254** and the top wall **252**. Alternatively, the gripping element **274** is positioned on a portion of the mounting portion **260**. The gripping element **274** can be integral to the overlay **250** or it can be a separate element fastened to a portion of the overlay **250**. For example, the gripping portion can be a plastic or rubber element fastened to the overlay **250**.

The overlay **250** can have alternate structures for facilitating movement of the overlay **250**. For example, the overlay **250** could have a post or a ring extending from a portion of the overlay **250**, each adapted for a user to engage and rotate the overlay **250**.

As shown in FIGS. 5, 7 and 8, and as explained above, the overlay **250** has a discontinuous structure, meaning that neither the top wall **252** nor the side wall **254** are continuous along the circumference of the cover **250**. As a result, the overlay has a first side wall portion **254b** and a second side wall portion **254c**. When the projection **264** is located in a portion of the top wall **252**, the projection **264** is positioned proximate either of the side wall portion **254b** or the second side wall portion **254c**. Preferably, the gripping element **274** is positioned on the other of the wall portion **254b** or the second

side wall portion **254c**. Alternatively, the gripping element **274** is positioned on the side wall portion **254b**, **254c** proximate the projection **264**.

Due to its discontinuous configuration, the overlay **250** has an aperture **276**. In one preferred embodiment, the overlay **250** has two aperture **276** wherein the portion of the overlay **250** above the mounting portion **262** has a generally hour-glass shape. The configuration and dimensions of the aperture **276** can vary greatly with the design parameters of the lid **210**. Referring to FIG. 7, the overlay **250** has two separate apertures **276a**, **276b**. Each of the apertures **276a**, **b** span a portion of the side wall **254**, the top wall **252** and the center portion **270**. Alternatively, the apertures **276a**, **276b** span only a portion of the side wall **254** and the top wall **252**.

As shown in FIG. 5, the aperture **276** is adapted to permit the passage or flow of the flowable contents held by the container through the opening **228** when the aperture is generally positioned about the opening **228**. Described in another manner, when the aperture **276** is aligned with the opening **228**, the flowable contents can pass through the opening **228**. Therefore, the aperture **276** should have a minimum configuration sufficient to permit the passage of the flowable contents through the aperture **228**.

The cover **212** and the overlay **250** each have a generally thin-wall construction. However, the wall thickness of the cover **212** and the overlay **250** can vary depending upon the design parameters, including the structural integrity of the lid **210**.

Referring to FIGS. 5 and 8, the overlay **250** and the cover **212** are cooperatively dimensioned such that the overlay **250** can be positioned on the cover **212** to define an "assembled position." In the assembled position, the overlay **250** is rotatably supported by the engagement of its mounting portion **260** and the mounting portion **222** of the cover **212**. Specifically, a lower surface of the mounting portion **260** engages an upper surface of the mounting portion **222**. Accordingly, the mounting portion **260** and the mounting portion **222** are cooperatively dimensioned such that the overlay **250** can be rotated with respect to the cover **212**, where the cover **212** is generally fixed to the container.

In addition, the overlay **250** can be rotatably supported by the engagement of its center portion **270** and the center portion **236** of the cover **212**. Specifically, a lower surface of the center portion **270** engages an upper surface of the center portion **236**. Accordingly, the center portion **270** is cooperatively dimensioned with the center portion **236** of the cover **212**. Alternatively, the lid **210** can be configured to have a clearance

between the center portions **236, 270** such that the center portions **236, 270** are not in engagement. In this configuration, the overlay **250** rotatably engages the cover **212** by the engagement of the mounting portions **222, 260**.

Alternatively, the overlay **250** can be rotatably supported by the engagement of its top wall **252** with the top wall **214** of the cover **212**. Accordingly, the top wall **252** is cooperatively dimensioned with the top wall **214** of the cover **212**. In another alternative, the overlay **250** can be rotatably supported by the engagement of its side wall **254** with the side wall **216** of the cover **212**. Accordingly, the side wall **254** is cooperatively dimensioned with the side wall **216** of the cover **212**.

In the assembled position, the overlay **250** is movable between a first position **P1** and a second position **P2**. In the first position **P1**, shown in FIG. 8, the projection **264** is received by the drink opening **228** such that the opening **228** is sealed wherein the lid **210** is closed. When the opening **228** is sealed, the edge **229** of the opening **228** is in frictional engagement with the projection **264**. A bottom portion (not shown) of the projection **264** can extend past the edge **229** of the drink opening **228**. This seal prevents the flow of the flowable substance in the container through the opening **228**, enabling the container and lid **210** to be moved without risking spillage. Also, in the first position **P1**, the aperture **276** is misaligned or offset from the opening **228**. Alternatively, the projection **264** and the opening **228** are in a snap fit engagement wherein each have sufficient structure to enable the snap fit engagement. Other cooperating sealing structures can also be utilized.

In the second position **P2**, shown in FIG. 5, a user rotates the overlay **250** wherein the aperture **276** is aligned with the drink opening **228** to form a passageway between the overlay **250** and the cover **212**. In the second position **P2**, the lid **210** is open. The passageway permits the passage or flow of the flowable substance held by the container through the lid **210**. When the lid **210** is in the second position **P2**, at least a portion of the aperture **276** is aligned with at least a portion of the edge **229** of the drink opening **228**. Also, in the second position **P2**, at least a portion of the recessed portion **240** of the cover **212** is aligned with the aperture **276**. In addition, in the second position **P2**, the projection **264** is misaligned or offset from the opening **228**. When the aperture **276** is partially aligned with the drink opening **228**, the passageway remains but its dimensions are reduced.

When the overlay **250** is moved between the first position **P1** and the second

position **P2**, the mounting portion **260** of the overlay **250** remains in rotatable engagement with at the mounting portion **222** of the cover **212**. Accordingly, the mounting portions **222**, **260** provide support to the overlay **250** such that the overlay **250** remains in the assembled position during movement between the first and second positions, **P1**, **P2**.

When the overlay **250** is moved between the first position **P1** and the second position **P2**, the center portion **270** of the overlay **250** remains in rotatable engagement with at the center portion **236** of the cover **212**. Accordingly, the center portions **236**, **270** provide an additional amount of support to the overlay **250** such that the overlay **250** remains in the assembled position during movement between the first and second positions, **P1**, **P2**.

A user can move the overlay **250** between the first position **P1** and the second position **P2** by grasping and manipulating a portion of the overlay **250**, for example, the side wall **254**, the top wall **252** or the mounting portion **260**. Alternatively, when so configured, the user can move the overlay **250** between the first and second positions **P1**, **P2** by engaging the gripping element **274**.

The overlay **250** can be rotated or moved a varying amount depending upon the numerous design parameters of the lid **210**, including but not limited to the configuration and dimensions of the side wall **254**, the mounting portion **260**, the projection **264** and the aperture **270**. Thus, the overlay **250** can assume a number of positions with respect to the cover **212**. The lid **210** is adapted to permit a user to move the overlay **250** between the first and second positions **P1**, **P2** with only one hand. This means that a user can hold the container and manipulate the overlay **250** with the same hand. This increases the flexibility and the commercial value of the lid **210**. As shown in FIG. 5, 7 and 8, the overlay **250** has two separate apertures **276** which permit the overlay **250** to be rotated in either a clockwise or counter-clockwise direction to move the overlay **250** between the first position **P1** and the second position **P2**. This feature further increases the flexibility and the commercial value of the lid **210**.

The lid **210** is adapted to be used without the overlay **250**. This means that the cover **212** is connected to a container but the overlay **250** is omitted. In this configuration, there is no structure to seal the opening **228** in the cover **212** and as a result, the flowable substance held by the container can pass through the lid **210**. In this configuration, the recessed portion **240** remains positioned on both the top wall **214** and

the side wall **216**. However, the drink opening **228** can be positioned in either the top wall **214** or the side wall **216**.

Although shown as having a generally circular shape, the lid **210**, including the mounting portions **222**, **260**, can have numerous configurations. For example, the lid **210** could have a rectangular, square, or oval shape. To ensure a leak-proof seal with the container, the shape of the mounting portion **222**, **260** should match the shape of the upper edge of the container so a cooperative sealing engagement can be achieved.

Alternatively, the mounting portions **222**, **260** could have a shape similar to the upper edge of the container, yet dissimilar from the shape of the side walls **216**, **254** and the top walls **214**, **252**. For example, the mounting portions **222**, **260** could have an annular shape consistent with the container shape and the side walls **216**, **254** and/or the top walls **214**, **252** could have a non-annular shape.

Unlike prior art designs, the dimensions and the configuration of the opening **228** are not affected by the engagement and disengagement of the projection **264** as the overlay **250** is moved between the first and second positions **P1**, **P2**. This attribute allows a user to repeatedly move the overlay **250** between the first position **P1** and the second position **P2**. Accordingly, the structural integrity and the durability of the lid **210** are increased.

The lid **210** can be formed by a variety of manufacturing processes, such as injection molding or a thermoforming operation, preferably vacuum forming and/or pressure forming. The cover **212** is preferably formed from plastic, however, other lightweight materials can be used to form the cover **212**. After the manufacturing process has been completed, the drink opening **228** may be formed in the cover **212** with a punch and die. The aperture **276** could also be formed with a punch and die.

Preferably, the overlay **250** is formed from the same material used to form the cover **212**. However, the overlay **250** can be formed from other lightweight materials.

The cover **212** can have at least one cover drain hole (not shown), preferably positioned in the center portion **236** near a lowermost portion of the center portion **236**. When excess flowable contents, e.g., liquid, accumulate on the cover **212**, the drain hole ensures the drainage of such contents into the container.

The overlay **250** can have an overlay drain hole (not shown), that is cooperatively dimensioned with the cover drain hole described above. The overlay drain hole is cooperatively positioned with the cover drain hole such that when the overlay **250** is

rotated to the first position **P1**, the cover drain hole and the overlay drain hole align to form a passageway that ensures the drainage of accumulated container contents. Alternatively, the overlay drain hole is cooperatively positioned with the cover drain hole such that when the overlay **250** is rotated to the second position **P2**, the cover drain hole and the overlay drain hole align to form the passageway.

The cover **212** can have at least one cover vent hole (not shown), preferably in the center portion **236** or the side wall **216**. Alternatively, the cover vent hole is positioned in a portion of the top wall **214** or a portion of the side wall **216**. The cover vent hole is adapted to ensure the continuous flow of the container contents through the opening **228** while venting the container. Preferably, the cover vent hole is positioned such that the venting of the container occurs while the lid **210** is in the second position **P2**.

The overlay **250** can have an overlay vent hole (not shown), that is cooperatively dimensioned with the cover vent hole described above. The overlay vent hole is cooperatively positioned with the cover vent hole such that when the overlay **250** is rotated to the second position **P2**, the cover vent hole and the overlay vent hole align to form a passageway that ensures the venting of the container.

The drain holes and the vent holes described above can be formed with a punch and die after the lid **210** manufacturing process has been completed. Alternatively, a pointed tool may be used to form the drain holes and the vent holes.

In another preferred embodiment (not shown), the lid has at least one pin on either the overlay or the cover. In addition, the lid has at least one socket on the other of the overlay or the cover. The pin and the socket are cooperatively dimensioned such that when the pin is received by the socket, the overlay is in rotational engagement with the cover. Because the overlay and the cover are in rotational engagement, the lid can be rotated between the first and second positions **P1**, **P2**. The pin and socket are adapted to support the overlay when the lid is rotated between the first and second positions **P1**, **P2**.

The cover has a center portion that can be recessed. The overlay is a discontinuous structure that is adapted to be positioned about the cover. The overlay has at least one aperture that is alignable with an opening in the cover. Preferably, the pin depends from a lower surface of the overlay, and the socket depends from an upper surface of the cover. In this configuration, the socket is positioned in the center portion

of the cover.

The overlay can include an annular mounting portion that engages a mounting portion of the cover. The overlay mounting portion supports the overlay during movement between the first and second positions. Alternatively, the overlay includes
5 a mounting portion but it is segmented, meaning that it is not annular.

In another alternative, the annular mounting portion is omitted from the overlay. In this configuration, the pin and socket primarily support the overlay when the lid is rotated between the first and second positions **P1, P2**.

While specific embodiments have been illustrated and described, numerous
10 modifications come to mind without significantly departing from the spirit of the invention and the scope of protection is only limited by the scope of the accompanying Claims.